

Antenna Datasheet

Product OC: YFGA003AA

Version: 3.0

Date: 2024-07-02

Status: Released

Product Name: GNSS Adhesive Mount FPC Passive Antenna

Key Features:

Frequency Band: 1559–1606 MHz

Efficiency: Up to 55.7 %

Dimensions: 39.45 mm × 13.25 mm

RoHS and REACH Compliant

Overview

YFGA003AA is a GNSS FPC antenna measuring 39.45 mm × 13.25 mm. This GNSS antenna provides coverage from 1559–1606 MHz. The antenna has a 100 mm-long cable, terminated with RF 1 connector, and is available with customized cable lengths and connectors. Ideal for applications where the antenna is required to be mounted inside, this adhesive mount omni-directional antenna, is easy to install thanks to its flexible material. It is compatible with Quectel's GNSS Series modules. It has been tested with ABS board.

It allows constant and reliable transmission and reception due to its omni-directional gain across all frequency bands. YFGA003AA is designed as a linear polarized antenna, which has low VSWR for low power consumption applications. It is a perfect antenna product for customers that desire highest performance. This high-efficiency, high-gain omni-directional antenna is ideally suited for Telematics, Fleet Management, Positioning.

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

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1 Specification

Test Condition: Stick on 3 mm thick ABS board

1.1. Electrical

Electrical	
Frequency Range	1559–1606 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Band Frequency (MHz)	GPS L5 GALILEO E5a BDS B2a- B2I QZSS L5 IRNSS L5	GALILEO E5b BDS B2b	GPS L2 QZSS L2C	GLONASS G2	BDS B3	BDS B1I	GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.5	1.3	1.2
Return Loss (dB)	-	-	-	-	-	-14.6	-16.7	-21.2
Efficiency (%)	-	-	-	-	-	53.8	54.8	55.4
Peak Gain (dBi)	-	-	-	-	-	1.5	1.6	1.5
VSWR				≤ 1.5				
Return Loss				≤ -14.3 dB				
Peak Gain				≤ 1.6 dBi				

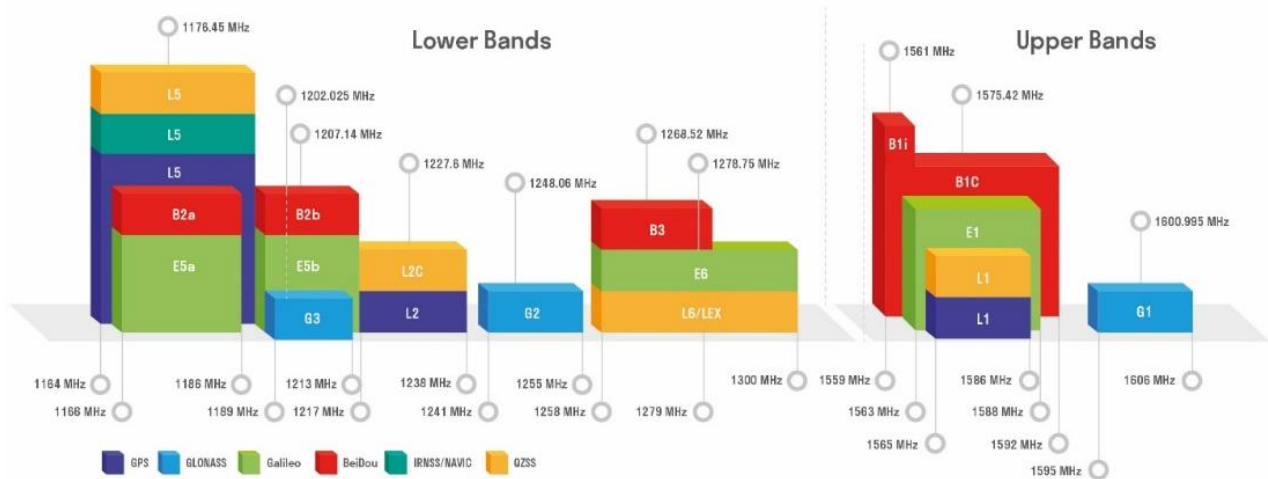
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	39.45 mm × 13.25 mm
Material & Color	FPC & Black
Cable Type & Length	Φ 1.13 Black & 100 mm
Connector Type	RF 1
Mounting Type	Adhesive
Weight	Typ. 0.6 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

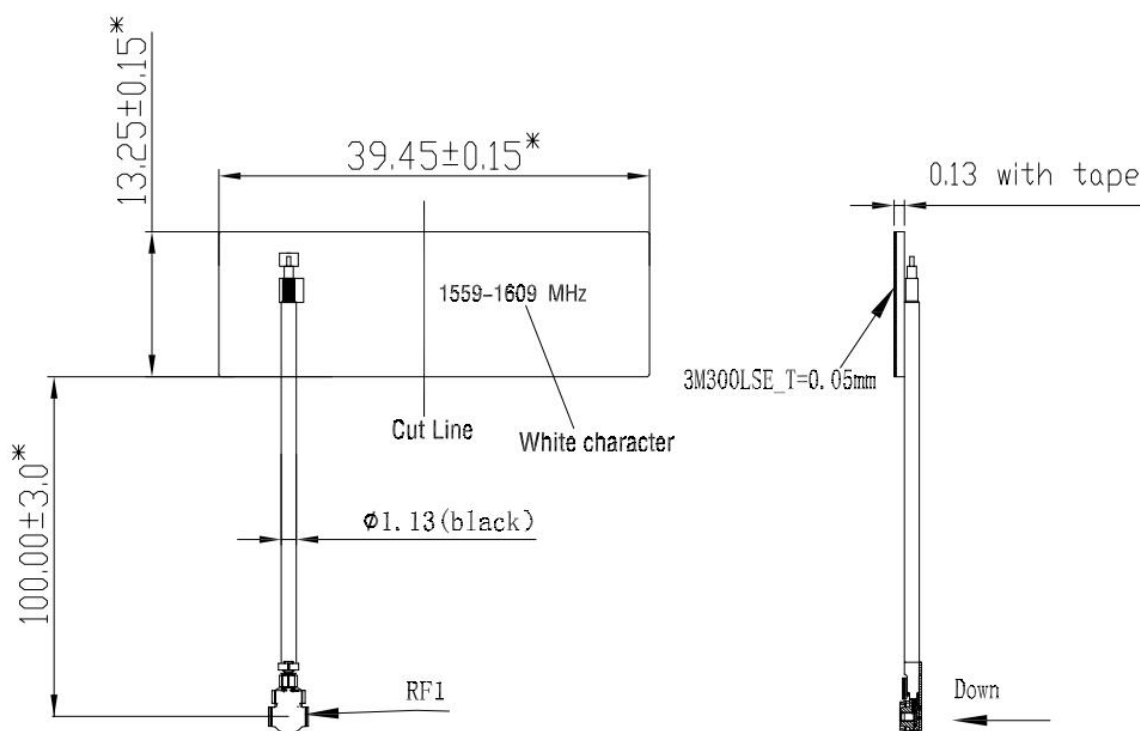
1.3. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
GPS	L1 Centre 1575.42 (1565–1586)	L2 Centre 1227.6 (1217–1238)	L5 Centre 1176.45 (1164–1189)		
	√	-	-		
GLONASS	G1-L10C-L10F Centre 1601 (1595–1606)	G2-L20C-L20F Centre 1248.06 (1241–1255)	G3-L30C Centre 1202.025 (1189–1213)		
	√	-	-		
GALILEO	E1 Centre 1575.42 (1563–1588)	E5a Centre 1176.45 (1166–1187)	E5b Centre 1207.14 (1197–1218)	E6 Centre 1278.75 (1258–1300)	
	√	-	-	-	
BDS	B1I Centre 1561.098 (1559–1564)	B1C (BDS-3) Centre 1575.42 (1559–1592)	B2a Centre 1176.45 (1166–1187)	B2b-B2I Centre 1207.14 (1197–1217)	B3 Centre 1268.52 (1258–1279)
	√	√	-	-	-
QZSS	L1 Centre 1575.42 (1573–1578)	L2C Centre 1227.6 (1226–1229)	L5 Centre 1176.45 (1166–1187)	L6 Centre 1278.75 (1257–1300)	
	√	-	-	-	
IRNSS	L5 Centre 1176.45 (1164–1189)				
	-				

GNSS Bands and Constellations



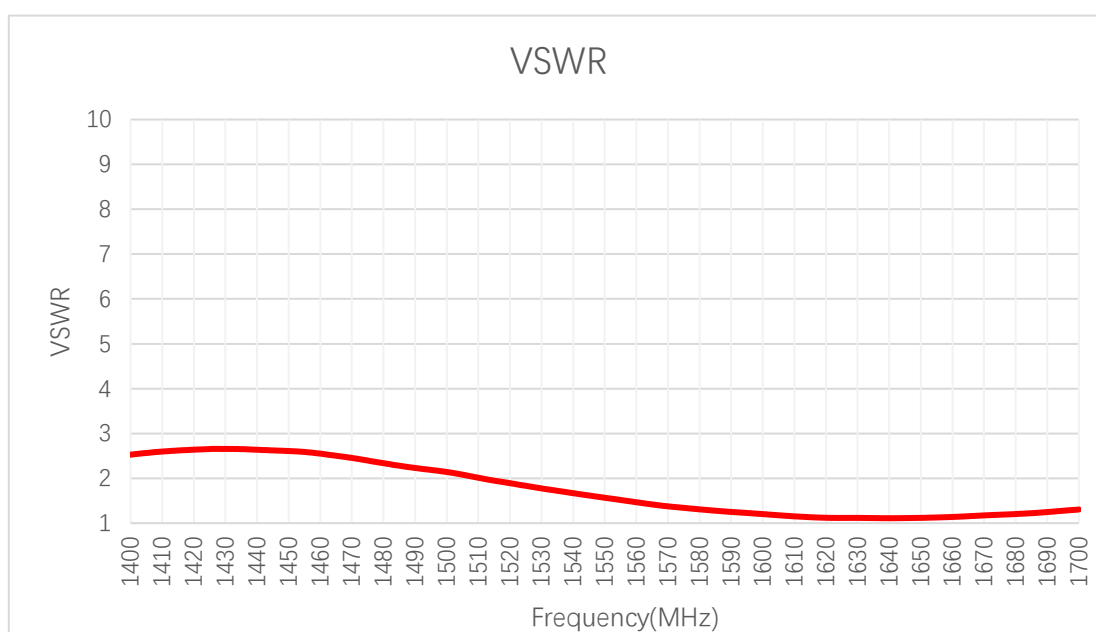
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

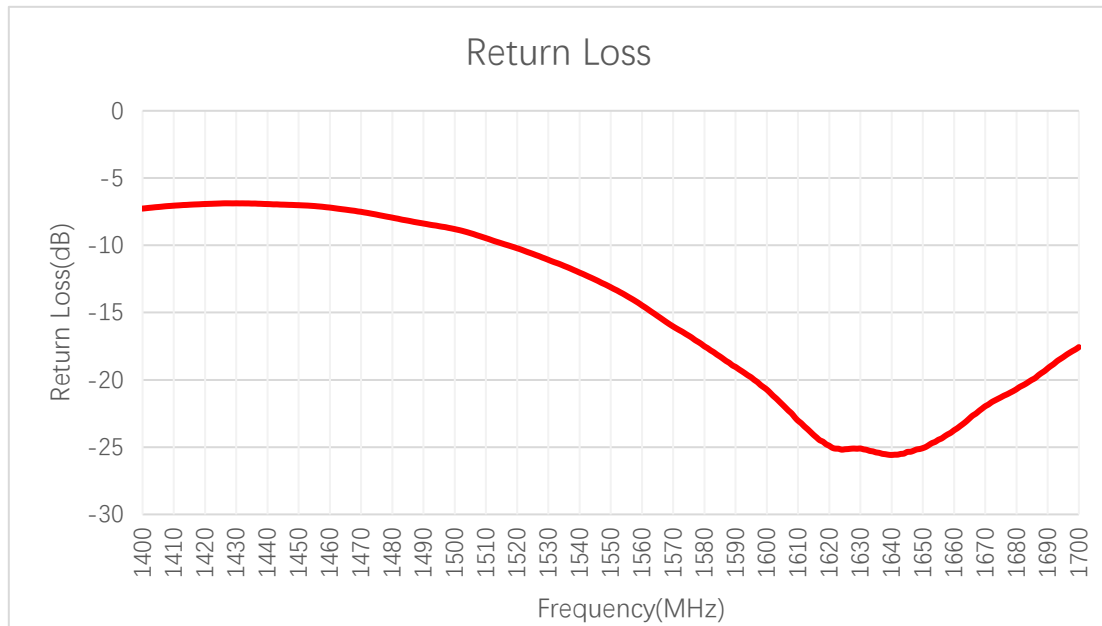
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.5	1.3	1.2

3.1.2. Return Loss

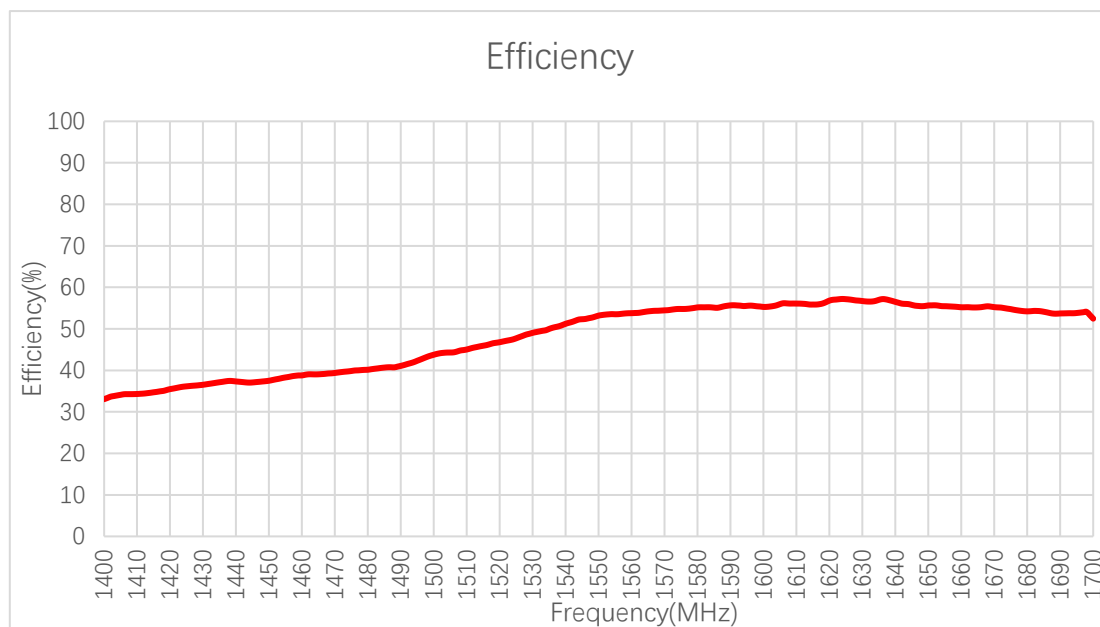


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-14.6	-16.7	-21.2

3.2. Radiation Performance Test

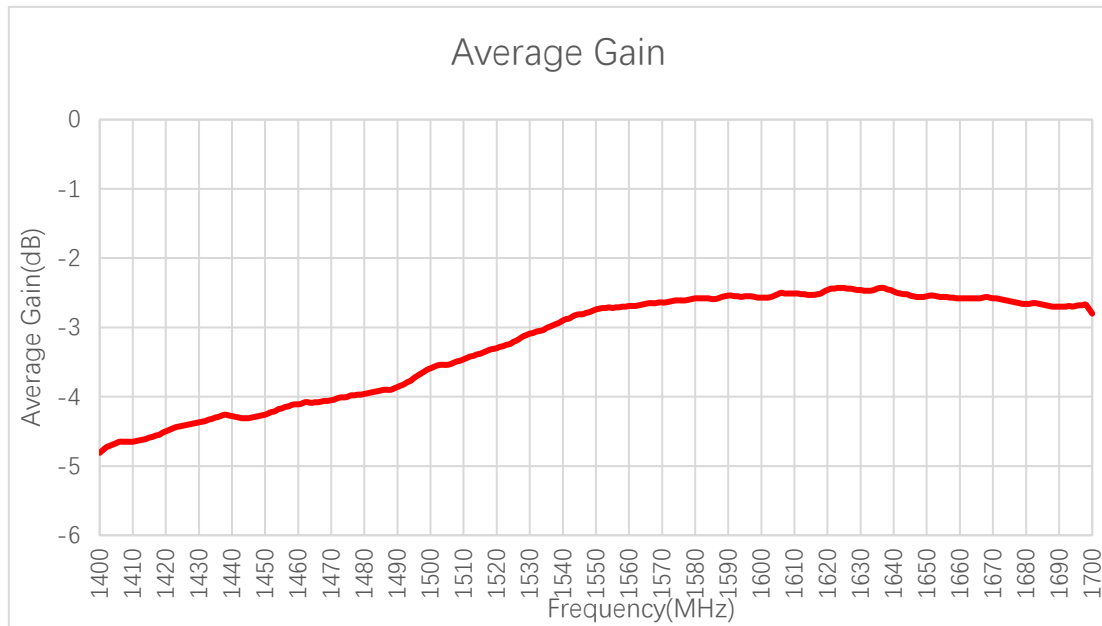
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	53.8	54.8	55.4

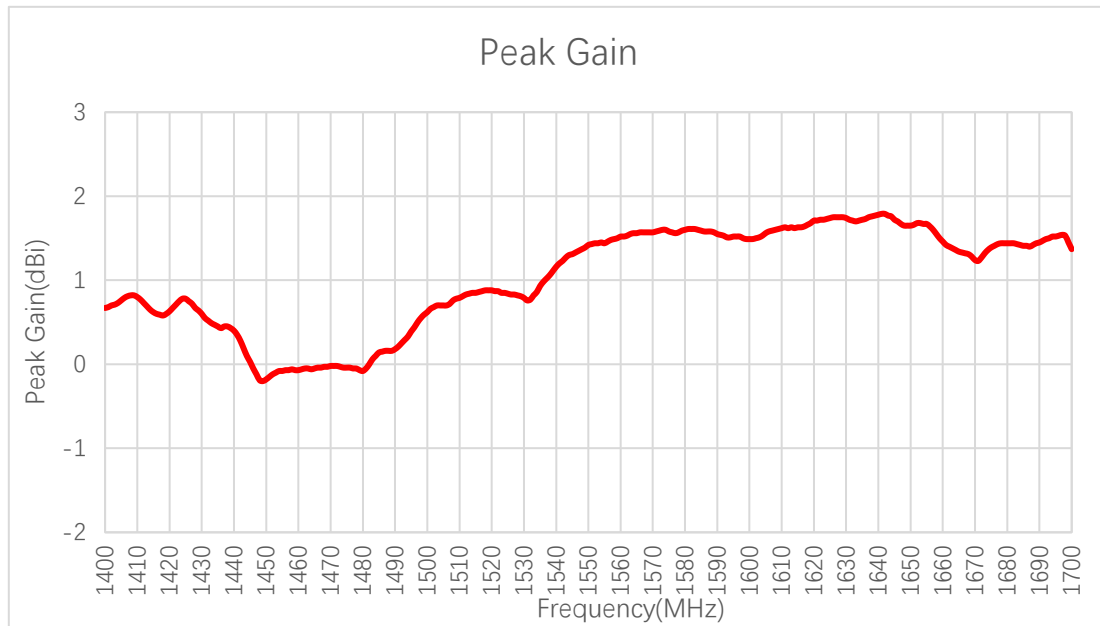
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Average Gain (dB)	-	-	-	-	-	-2.7	-2.6	-2.6

3.2.3. Peak Gain

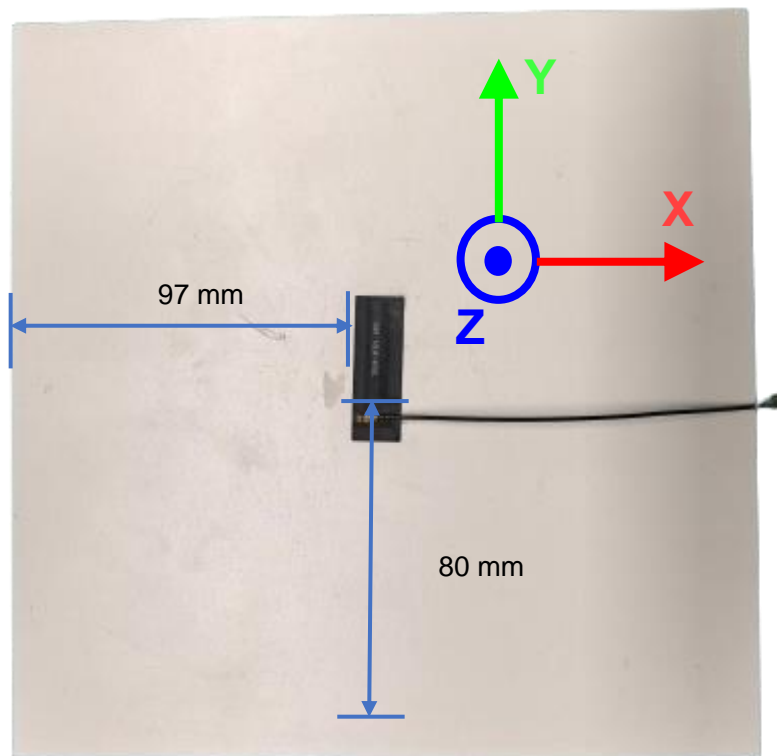


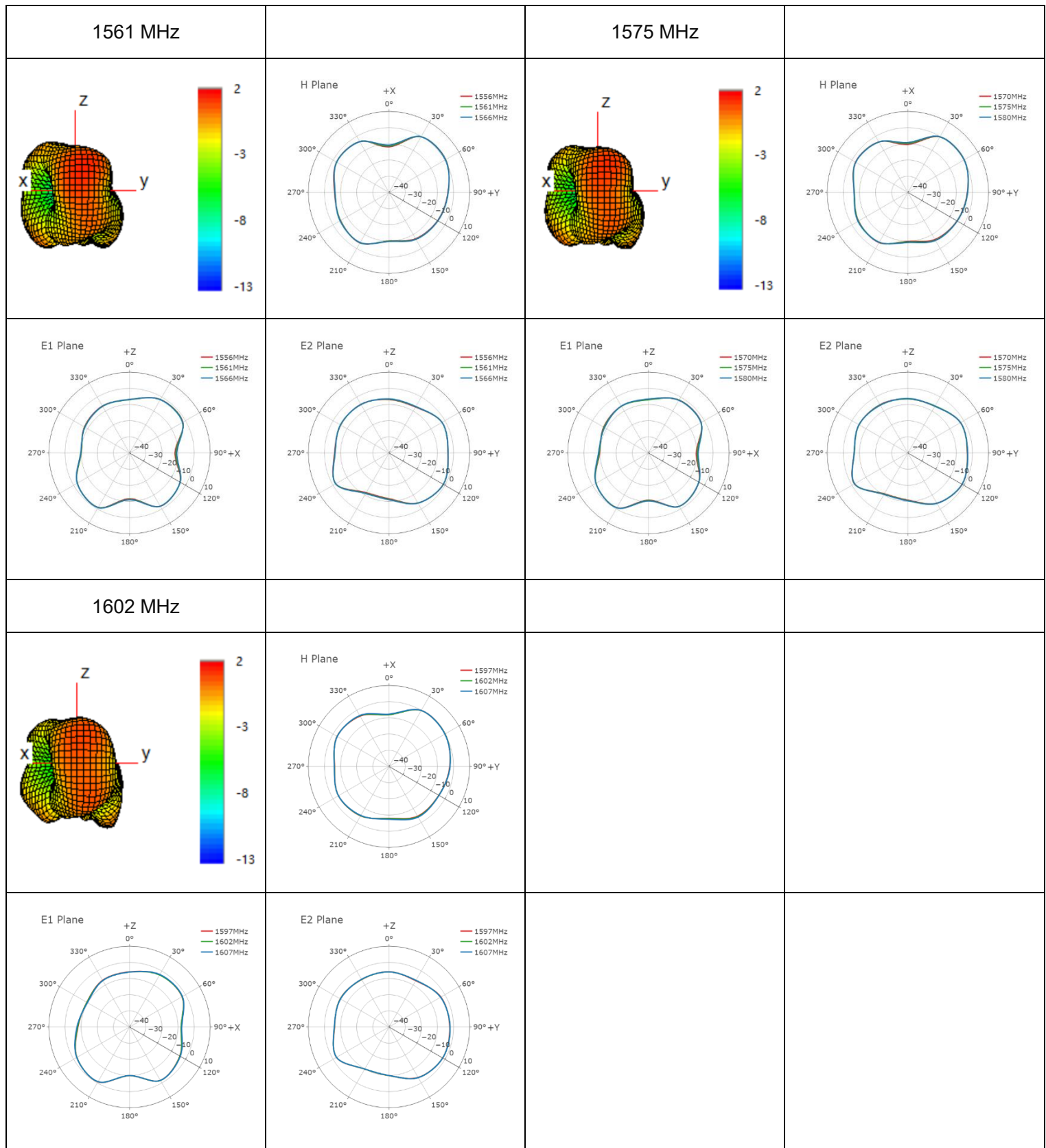
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	1.5	1.6	1.5




3.2.4. 3D & 2D Radiation Pattern

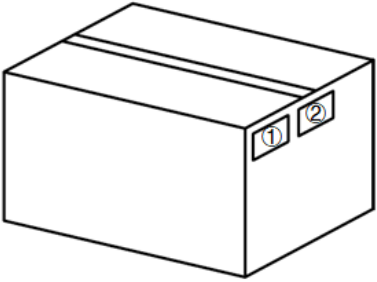
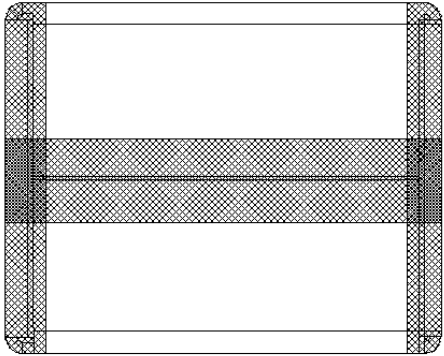
- Test Condition: Stick on 3 mm thick ABS board
- Test Chamber: GL-G-1





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		50 pcs antenna products in a small PE bag. (50 PCS/ Small PE Bag)
2		200 pcs antenna products in a big PE bag. (200 PCS / Big PE Bag)
3		(25 Big PE Bags / Carton Box) (5000 PCS Antennas / Carton Box) <u>Carton Size:</u> <u>L × W × H = 300 × 250 × 200 mm</u>

4		<p>Position for Attaching Labels</p> <p>① Carton Label</p> <p>② Quality Label</p>
5		<p>Sealing Cartons</p> <p>“⊥” type sealing cartons</p>

Contact Us

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Revision History

Version	Date	Author	Note
-	2021-05-26	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-05-26	Kenny YIN/ Aria CHU	First official release
1.1	2021-12-03	Kenny YIN/ Aria CHU	Updated the product description (Chapter 1).
2.0	2023-08-26	Rainey LIAO/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.
2.1	2023-12-05	Lucky FENG/ Aria CHU	Added REACH compliant (Chapter 1.2).
3.0	2024-07-02	Zeline LIANG	Numerous changes were made to this document. It should be read in its entirety.



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